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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/066,292

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Heinrich A. Eberl

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EXAMINER

LEWIS, DAVID LEE

ART UNIT

PAPER NUMBER

2629

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/066,292

Applicant(s)

EBERL ET AL.

Examiner

David L. Lewis

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7,8,13,15,21-24,27-29 and 32-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7,8,13,15,21-24,27-29 and 32-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claims 45 and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Fukushima et al. (6346929).**

As in claim 45, Fukushima et al. teaches of an information system, comprising: an optical signal capturing unit constructed and arranged to capture light from a natural scene ambient to said eye without capturing light reflected from said eye, figure 2 item 3;

a projection unit, provided in a predetermined spatial relationship to said optical signal capturing unit, configured and adapted to project visible images into said eye, figure 2 item 2;

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and means configured and adapted for extracting image information pertaining to said natural ambient scene from said captured light, for determining an orientation of said projection unit relative to said natural ambient scene on the basis of said extracted image information, **figure 2 item 5, column 12 lines 50-65, column 3 lines 35-67.**

and for controlling said projection unit such that said visible images are projected onto said eye in a manner perceived as being in registration with said natural ambient scene, **column 7 lines 15-40**

As in claim 46, Fukushima et al. teaches of wherein said visible images comprise image information obtained from said captured light, **figure 2 item 3, column 7 lines 15-50.**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. **Claims 7, 8, 13, 15, 21-24, 27-29, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (6346929) in view of Saitou et al. (5604818).**

As in claim 7, Fukushima et al. teaches of an information system, figure 2,

comprising a optical signal unit constructed and positioned to capture signals reflected back from at least one eye comprising the retina, figure 12 item 130

said optical signal unit comprising a scanning detection unit, figure 12 item 165 and 163;

an information unit, figure 2 item 5, figure 3A item 111;

a wireless communication unit, figure 3A item 115, column 4 lines 40-45, column 7 lines 11-15;

and an output unit constructed and arranged to provide information, figure 2 item 2R/L,

at least partially obtained via said communication unit, **column 7 lines 8-15**, in cooperation with said information unit as a function of said captured signals, said output unit being not capable of projecting information onto the retina, wherein said information system does not project electromagnetic radiation onto said eye in the course of said provision of information, **column 3 lines 55-67, column 4 lines 45-66**.

Wherein Fukushima does not project electromagnetic radiation onto said eye in the course of said provision of information, because said display, figure 2 items 2R and 2L provides an image screen on which to provide the virtual image as opposed to said eye.

However Fukushima et al. fails to teach of said optical signal unit constructed to at least partially capture a **retinal reflex image** of said retina. Fukushima teaches of capturing a corneal reflex image, however using a retina reflex is a known alternative and/or addition to the visual axis detecting method of Fukushima as known in the art.

Saitou et al. teaches of a visual axis detecting method wherein said optical signal unit constructed to at least partially capture a retinal reflex image of said retina, **column 3 lines 43-67 and column 5 lines 25-33**. Saitou teaches said retinal reflex image relates to an apparatus for measuring a sighting direction of eyes, for example on a device as taught by Fukushima et al. As shown in figure 4 Saitou teaches of a separate sequence, 420-470 where specific electromagnetic radiation is not projected to the eye.

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Therefore it would have been obvious to the skilled artisan at the time of the invention to combine the retinal reflex image of said retina as taught by Saito et al., within the eye tracking device of Fukushima because Saito et al. teaches said retinal reflex imaging is applicable to applications as taught by Fukushima, wherein eye tracking is obtained by detecting the visual axis, as found in claim 7.

As in claim 8, Fukushima et al. teaches of information system, comprising an optical signal unit constructed and positioned to capture signals reflected back from an one eye comprising a retina, , **figure 12 item 130,**

and carrying out a less comprehensive capture of said retinal reflex image during a later scanning operation, **column 11 lines 1-37;**

an information unit, **figure 2 item 5, figure 3A item 111;**

a wireless communication unit, **figure 3A item 115, column 4 lines 40-45, column 7 lines 11-15;**

and an output unit constructed and arranged to provide information, at least partially obtained via said communication unit, in cooperation with said information unit as a function of said captured signals, **figure 2 item 2R/L, column 7 lines 8-15, column 3 lines 55-67, column 4 lines 45-66.**

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However Fukushima et al. fails to teach of at least partially capture a retinal reflex image of said retina during a first scanning operation, **or of** said output unit comprising a scanning projection device constructed to project at least part of said information onto said retina. Fukushima teaches of capturing a corneal reflex image, however using a retina reflex is a known alternative and/or addition to the visual axis detecting method of Fukushima as known in the art.

Saitou et al. teaches of a visual axis detecting method wherein said optical signal unit constructed to at least partially capture a retinal reflex image of said retina, column 3 lines 43-67 and column 5 lines 25-33. Saitou teaches said retinal reflex image relates to an apparatus for measuring a sighting direction of eyes, for example on a device as taught by Fukushima et al. As shown in figure 4 Saitou teaches of a separate sequence, 420-470 where specific electromagnetic radiation is not projected to the eye.

Therefore it would have been obvious to the skilled artisan at the time of the invention to combine the retinal reflex image of said retina as taught by Saito et al., within the eye tracking device of Fukushima because Saito et al. teaches said retinal reflex imaging is applicable to applications as taught by Fukushima, wherein eye tracking is obtained by detecting the visual axis, as found in claim 8.

As in claim 21, Fukushima et al. teaches of wherein said information system does not project electromagnetic radiation onto said retina, column 11 lines 40-45, wherein information is displayed on the screen in front of the users eye.

As in claim 22, Fukushima teaches of wherein said retinal reflex image is a reflex image of a natural scene ambient to said eye, column 11 lines 1-45, and said information system is configured and adapted to extract image information pertaining to said natural scene from said retinal reflex image, column 11 lines 1-45. Wherein because the system for gaze detection is not closed, natural scene ambient to said eye are allow collected by the half mirror and directed to the CCD.

As in claim 23, Saitou teaches of wherein said scanning projection device is constructed and arranged to project light onto said retina and said retinal reflex image comprises a portion of said projected light that has been reflected from said retina, column 3 lines 43-67, column 5 lines 24-35. Wherein said cornea or retinal reflection can serve the same end.

As in claims 24 and 28, Fukushima et al. teaches of an information system, comprising: an optical signal unit constructed and positioned to capture signals associated with an eye, **figure 12 item 130**;

a wireless communication unit, **figure 3A item 115, column 4 lines 40-45, column 7 lines 11-15**;

a camera constructed and arranged to capture optical signals from a natural scene ambient to said eye, **figure 2 item 3r/3l**.

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and an output unit, interfaced with said wireless communication unit,
figure 2 item 2r/2l

constructed and arranged to provide information using a correlation unit constructed to find suitable relationship between said captured signals and additional data, **column 5 lines 1-25**, wherein a parent and child screen correlate display information as instructed by a display processing portion.

said information system is configured and adapted to extract image information pertaining to said natural scene from said retinal reflex image and said correlation unit is configured and adapted to determine a correlation between said captured optical signals and said extracted image information in said finding of said suitable relationship, **column 3 lines 55-67, column 4 lines 1-15**. Wherein a users finger is captured and provided to the user virtually within said display based on the information of eye gaze.

However Fukushima et al. fails to teach of wherein said optical signal unit is configured and adapted to at least partially capture a retinal reflex of a naturally perceived field of view of said eye, and said captured signals comprise said at least partially captured retinal reflex. Fukushima teaches of capturing a corneal reflex image, however using a retina reflex is a known alternative and/or addition to the visual axis detecting method of Fukushima as known in the art, figure 12 item 130.

Saitou et al. teaches of a visual axis detecting method wherein said optical signal unit constructed to at least partially capture a retinal reflex

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image of said retina, and said captured signals comprise said at least partially captured retinal reflex, column 3 lines 43-67 and column 5 lines 25-33. **Saitou teaches of** said information system configured and adapted to extract information representative of said physical retinal structures from said captured portion of light, column 5 lines 5-34, wherein the extraction of the corneal and retinal reflection images is performed. Saitou teaches said retinal reflex image relates to an apparatus for measuring a sighting direction of eyes, for example on a device as taught by Fukushima et al. As shown in figure 4 Saitou teaches of a separate sequence, 420-470 where specific electromagnetic radiation is not projected to the eye.

Therefore it would have been obvious to the skilled artisan at the time of the invention to combine the retinal reflex image of said retina as taught by Saito et al., within the eye tracking device of Fukushima because Saito et al. teaches said retinal reflex imaging is applicable to applications as taught by Fukushima, wherein eye tracking is obtained by detecting the visual axis, as found in claim 24 and 28.

As in claim 27, Fukushima et al. teaches of comprising an eye-tracking unit constructed and arranged to project light onto said eye, to capture a portion of said projected light that has been reflected from said eye and to determine, on the basis of said captured portion of light, an orientation of said eye, where said correlation unit is constructed and arranged to employ said determined orientation of said eye in finding said suitable relationship, column 11 lines 1-36.

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As in claims 29, Fukushima et al. teaches of said optical signal unit is constructed and arranged to capture, from said eye, an ocular reflex of said natural scene ambient to said eye, said information system is configured and adapted to extract image information pertaining to said natural scene from said captured ocular reflex, figure 2 item 3, figure 12 item 130, column 11 lines 1-20, and said correlation unit is constructed and arranged to determine a correlation between said captured ocular reflex and said captured signals in said finding of said suitable relationship, column 10 lines 1-26, column 11 lines 1-20. Wherein the combination of the camera 3 and gaze monitor 130 provides said extracted image information.

As in claim 34 Fukushima in view of Saitou et al. teaches of wherein said information system is configured and adapted to extract information representative of physical retinal structures of said retina from said retinal reflex image, Saitou, column 5 lines 24-35.

As in claim 13, Fukushima et al. teaches of information system applied above to claims 7 and 8, however Fukushima et al. fails to teach of a signal input unit constructed and positioned to capture at least two types of signals reflected back from at least one eye having a different spectral range. Fukushima teaches of only a corneal reflection or signals being reflected back from said eye, column 11 lines 1-20. Fukushima teaches of capturing a corneal reflex image, however using a retina reflex is a known alternative and/or addition to the visual axis detecting method of Fukushima as known in the art.

Saitou et al. teaches of a visual axis detecting method having a signal input unit constructed and positioned to capture at least two types of signals reflected back from at least one eye, column 3 lines 42-67. Wherein a first and second light source is invisible, and provided at different location relative to the optical axis, $I1(xy,)$ and $I2(x,y)$. While Saitou fails to teach of said signals having a different non-overlapping spectrum, said feature would have been an obvious design choice to the skilled artisan in view of the need to capture the signals simultaneously from two separate sources. The signals would have different optical spectrums for the purpose of better distinguishing each without interference from the light of the other. The correspond light sensor would not have to be concerned with false readings or additive noise from the other source. Saitou teaches said retinal reflex image relates to an apparatus for measuring a sighting direction of eyes, for example on a device as taught by Fukushima et al.

Therefore it would have been obvious to the skilled artisan at the time of the invention to combine the retinal reflex image of said retina as taught by Saitou et al., within the eye tracking device of Fukushima because Saitou et al. teaches said retinal reflex imaging is applicable to applications as taught by Fukushima, wherein eye tracking is obtained by detecting the visual axis, as found in claim 13.

As in claim 15, Fukushima et al. teaches of wherein said signal input unit includes a field-of-view capturing unit constructed to capture visible light from a field of view associated with the retina without capturing a retinal reflex image thereof, figure 12 items 130; and said output unit being suitable for providing said information in correlation with said captured visible light, column 11 lines 1-20.

As in claims 32, Fukushima et al. teaches of wherein said projection device is a scanning projection device, figure 12 item 165 and 163.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 33 and 35-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 33 recites "signals emanating from said eye" in distinction to signals reflected back from said eye. The examiner is not clear on what is meant by signals emanating from said eye and the specification does not make it clear. Claim 35 recites "physical retinal structures". The examiner is not clear on what is meant by said physical retinal structures and the specification does not make it clear. Please provide a explanation to allow for examination of the subject matter.

Response to Arguments

4. Applicant's arguments with respect to claims 1-4, 6-9, 11-13, 15-19, and 21-31 filed on 5/1/2006 have been considered, but are moot in view of the new grounds for rejection. The Examiner has reinterpreted specific portions of Fukushima and has provided a new rejection in view of Saitou et.

Conclusion

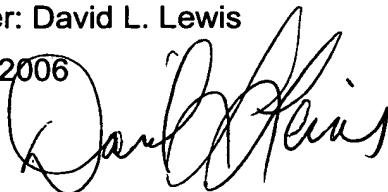
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(571) 272-7673**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on **(571) 272-7681**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571)-273-8300.
6. Please note that all future correspondences directed to David L. Lewis must be sent to Art Unit 2629.
7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on

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access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: David L. Lewis

July 10, 2006

A handwritten signature in black ink, appearing to read "David L. Lewis", is written over the printed name and date.